placing its control in the hands of those who have made astronomy their life-work. The Navy will be provided, if the recommendations are carried out, with an Observatory well suited to its special needs, and would be relieved from the task of supervising work in which it has no interest aside from that felt in scientific work in general.

NOTES

WE learn with much regret of the death of Dr. Spencer Cobbold, F.R.S., the well-known authority on parasites and parasitic diseases, at the age of fifty-seven years.

WE understand that it is proposed to award the Founder's Medal of the Royal Geographical Society to Major Greely, the leader of the late United States Arctic Expedition to Grinnell Land, and the Patron's Medal to Cavaliere Guido Cora, Professor of Geography at the University of Turin, and founder and conductor of the geographical journal known as *Cosmos*. The Back Grant will probably go to Sergeant Brainard, who did such admirable work on the Greely Expedition.

MR. J. Y. BUCHANAN, who is in charge of the *Buccaneer*, telegraph surveying ship for the India-rubber Construction Company, writes home from St. Thomas, under date February 1, giving some account of his doings up to that time. When the survey to Loanda was completed, Mr. Buchanan was to be free to take any soundings he pleased and any route he pleased through the Atlantic, so long as he is home by the beginning of April. He has reached Loanda and visited Ascension, and expected to be at the Azores on the 24th. The following was to be Mr. Buchanan's programme after leaving Loanda:—"Stop at 6 a.m. Sound, then take temperatures, water-bottles, tow-net, and possibly dredge. This will take till noon, or perhaps longer; then on again. Next day stop and sound at noon, and take any observations which can be made during the sounding. This may detain us two hours; then on again, and next morning stop at 6 a.m., and make a station again. In this way the time divides itself into periods of 48 hours. Say from 4 p.m., when we set on after finishing a station, we run till 11 a.m. next day; this is 19 hours, or 200 miles; then stop 2 hours; then on again till 6 a.m. of next day, making 17 hours, or 175 miles; then stop till 4 p.m. In this way we get 36 hours' steaming and 12 hours' work in the 48, and cover 375 miles." "We have got very interesting results so far," he goes on, "and a perfect plethora of material. We made a most delightful excursion yesterday," he continues, "to a cinchona plantation up in the high ground in the interior of this island (St. Thomas). They grow very good coffee, and there is no leaf-disease, and they are planting everything up with cacao, which at present prices pays enormously. The island lies only twenty miles north of the equator, and both St. Thomas and Principe are perfect examples of the luxuriance of equatorial vegetation. In Principe the jungle is more dense; in St. Thomas the trees are on a larger scale, and there is magnificent timber. With the exception of Accra and Gaboon, these two islands are the only places where we have landed. All along the so-called *West* Coast the surf is at all times bad and frequently dangerous, so that communication is only kept up by native surf-boats, and Europeans pass through it as rarely as possible. . . . The African rivers are quite stupendous, and have much to do in giving the Gulf of Guinea its peculiar character. The drainage of quite 90 per cent. of the whole continent empties itself into a very restricted area of the sea, the formation and the conditions of which it has profoundly modified."

THE Colonial and Indian Exhibition, which opens in May, besides its wide general interest, will evidently have many points of special interest to men of science. The flora and fauna of almost all the colonies will be represented more or less completely. Thus, Mrs. Blake, the wife of the Governor of the Bahamas, has sent a series of beautiful paintings of the flora of that archipelago for the West Indian section; British Guiana sends specimens of all its woods, to the number of 74. Each block is about 3½ inches wide, 15 inches long, and 3 inches deep. The several pieces are labelled with the colonial name of the wood, its botanical name wherever possible, the height to which the tree grows, and its use. Dr. Schomburgk, the Director of the Botanic Gardens of South Australia, is sending a very comprehensive dried collection of the flora of that colony. It consists of four volumes, and contains 1100 different specimens. A similar collection was sent to the last French Exhibition, and is now in the Paris Herbarium. It is proposed after the Exhibition is over to present this collection to Kew Gardens, or to one of the Universities. Visitors to the South Australian Court will also have an opportunity of examining the magnificent fern-trees of the colony, four of them having been despatched to London for the Exhibition. The trunk of one of these weighed 500 lbs. The Canadian Geological Survey will send a large collection of the minerals of the Dominion; while there will also be collections of Canadian fauna and flora. The animal kingdom of Manitoba and the North-West Territory will be represented with particular care; while the entomological collection will be very comprehensive. Indeed, mineralogy and natural history will form two of the four main departments of the Canadian section. Similarly the mines and the flora of New South Wales will be amply represented. From Victoria comes a large natural history collection, including two young Australian aborigines, and a number of specimens of ferns, which will be arranged in a kind of natural fern-tree gully. The tropical and sub-tropical flora of Queensland will be shown, as will also specimens of the mineral wealth of the colony. From New Zealand comes a large collection of mineralogical and geological specimens, including castings of gigantic fossil reptiles. There will be about 500 specimens of the forest woods of South Africa, and the medical, meteorological, and natural history departments of the Straits Settlements section are receiving special attention from Dr. Rowell. In the West Indian section will be collections o tropical plants from the various islands—pine plants from Antigua, cabbage palms from St. Kitt's, lime-trees from Montserrat, and tree-ferns from Dominica. The process of hatching the ova of turtle will be displayed in this section, which, in addition, will contain a collection of stone implements and relics of the Carib race. There will therefore be no lack in the forthcoming Exhibition of objects deserving of the attention of students in most branches of science.

THE new aquarium which is now being constructed for colonial and Indian fishes, to be shown at the forthcoming Exhibition at South Kensington, is rapidly approaching completion. The building contains twelve tanks in addition to a colossal habitat for turtles, capable of accommodating fifty specimens. In juxtaposition to the latter a hatchery has been erected for incubating the ova of turtle, which will be effected through the medium of heated sand. The hatchery is formed of glass, and contains a grotto arranged in an attractive manner by means of rockwork, over which water will flow into a pool beneath, forming a cascade. The entire aquarium will be heated according to the climatic exigencies of the various fish. Those of India require a temperature of 92°, which is the normal state of their native waters. All the fish will be fresh-water specimens, and on this account great difficulty will attend their transmission to this country. The turtles, however, will be those indigenous to the sea, and comprise chiefly the green turtle (*Chelonia midas*), which will be sent by the West Indian Commissioners in large numbers. The Australian, New Zealand, and Victorian authorities have announced their inability to forward specimens from

their respective colonies. This is to be regretted, especially in regard to Australia, from whence some interesting fish could be sent.

THE Japanese Government has decided to erect a meteorological observatory on the Loochoo Islands. The necessary apparatus for this purpose was sent there at the beginning of the year. From the geographical position of the archipelago this observatory should be able to render important services to meteorological science.

WE have received a pamphlet on "The Present Position of the Museum and Art Galleries of Glasgow," published by order of the Town Council, and containing an indictment of that body for its neglect to provide adequately for these two institutions. After sketching their vicissitudes and their present somewhat doleful condition, the writer states what they actually are and what they should be. With regard to this latter it needs only to be said that his observations are, in our judgment, perfectly accurate. He complains that the Kelvingrove Museum has been placed haphazard in an inconvenient and unsuitable position, that no permanent character has been given to the collection, the arrangement being only temporary and provisional, and that its main characteristic at present is its miscellaneous nature. "There is much to excite the attention and to stimulate the curiosity of the ordinary visitor, but the museum displays little which serves to draw the attention of the investigator or the man of special knowledge." He insists on the function of the museum as an educational element in the town rather than a mere show or place of public resort, and on the special duty—not to say necessity—of a city like Glasgow, with vast commercial and industrial interests, to be adequately equipped in this respect. There can be no question as to the justice of the writer's concluding observation: "It is open for the municipality to elect whether a museum shall be established or not; but, having made the choice, it has no right to found such an institution on an insufficient basis, nor to maintain it on a scale which deprives it of its most important and useful function." It may be hoped that the publication by the Council of this sharp attack on itself is a sign of compunction for its shortcomings in the past and a promise of better things in future.

WE have already referred to the anxiety which exists in Japan with regard to the fate of the Imperial Engineering College at Tokio, now that the department under which it was founded and organised has been abolished in recent administrative changes. The institution was a peculiarly English one; it was established and worked by an English principal and a staff of English professors, and the names of many of the latter, past and present, are well known in the scientific world. In a recent article in the *Japan Mail* on the subject of University education in Japan, the editor (himself, we believe, a former professor in the College) writes thus:—"The threatened absorption of the College of Engineering, with its admirable organisation and its complete buildings, into the University (of Tokio), is an event to which enlightened men, and all the friends of Japan, can look only with grave dread. That these buildings, the result of so much thought and care and high ambition, should be divorced from their original purpose, and that the only institution in Japan which might well be called first-class should be ruthlessly uprooted, would be a blow to the higher education in Japan which would make her detractors laugh and her friends hold down their heads in shame." No doubt grave warnings such as these from a writer of experience, whose general sympathy with Japan is recognised, will cause the Japanese authorities to reflect carefully on any step they may take with regard to the College.

PETROLEUM-WELLS are reported to have been discovered at the peninsula of Jemsah, on the west coast of the Red Sea, 170 miles south of Suez, at the foot of the mountain known as Jebel Zeit, or Oil Mountain. M. Deboz, the Belgian engineer, who was sent to search for petroleum in January last, commenced boring at a distance of thirty miles from the sea. After penetrating successively through gypsum, containing veins and nests of sulphur, shale, green and blue clay, limestone, and sandstone, the drill on February 28 fell suddenly 40 centimetres, and petroleum rose to a point 2 metres above the sea-level.

THE Italian Government have lately deposited 500,000 fry in Lake Como, with the view of replenishing the stock of fish. It is the intention of the Government to adopt similar measures in regard to other important lakes. They also have resolved to undertake the propagation of lobsters artificially, thus reviving a branch of fish-culture which previously existed in Italy.

AT the stated meeting of the Royal Irish Academy, held on the 16th inst., Prof. Frankland and Lord Rayleigh were elected as Honorary Members in the Department of Science. The President, Sir S. Ferguson, nominated as Vice-Presidents for the ensuing year, Dr. Ingram, Rev. Dr. Haughton, Sir R. Ball, and Prof. J. P. O'Reilly.

A SOURCE of mineral water was discovered a few days ago in the very centre of St. Petersburg. In the yard of one of the houses situated on the Maika Embankment, close by the Winter Palace, a boring 560 feet deep was made in order to reach the source. In composition this water is said to be like that of Staraya Russa, or Kreuznach, while in taste it is quite similar to genuine seltzer water.

ACCORDING to the communication of the mining engineer, L. P. Dolinski, to the Society of Natural Science of Odessa, a very important discovery of cinnabar mines has been recently made in the mining region of the Don in Russia. The ore contains from 69 to 80 per cent. of pure mercury.

ACCORDING to a medical report just published, the cattle plague continues to ravage various parts of Russia. Within a period of five years, from 1876 to 1880, the loss is estimated at no less than 1,208,500 head of horned cattle; but even these figures, based upon official information, are considered far below the real value.

WE notice in the last issue of the *Izvestia* an interesting paper, by M. Stephanoff, on the religious beliefs of the Chersonese people. Although all Christians, they still adhere to their beliefs in good and evil spirits, and worship them—the good spirits in forests and groves, where coniferous trees are mixed with foliaceous ones; and the evil spirits in purely coniferous forests. Every god is represented by a special tree, and served by a separate priest, who is not hereditary, as with the Siberian Shamanists, but elected by lot. The sacred groves are preserved with great care, and some trees are two and three hundred years old. From time to time, according to orders given by some prophets to whom the gods appear in dreams, thousands of Chersonese, coming from different districts and provinces, meet together in sacred groves to sacrifice hundreds of horses, cows, sheep, and fowls, and to share in a general feast. These considerable expenses are covered by voluntary taxation of all villages taking part in the feast. The paper of M. Stephanoff is accompanied by an interesting illustration of worship.

IN regard to the electro-magnetic rotation of light, Herr Kundt (*Wied. Ann.* 2) notes the fact that all simple substances hitherto examined, be they strongly magnetic or strongly diamagnetic, show positive electro-magnetic rotation. Negative rotation is shown only by chemical compounds, and such as contain atoms of strongly magnetic elements (as iron salts). Positive rotation has been proved in the case of eleven elements, viz. Fe, Co, Ni, Br, Se, S, P, C (diamond), O, N, H.

THE question whether electro-magnetic forces may not have demonstrable action on natural, as well as polarised, light, has been lately taken up by Herr Sohncke (*Wied. Ann.* 2). His guiding idea was this:—It is known that two polarised light-rays from the same source, meeting at a sufficiently acute angle, interfere most if they are polarised parallel, and not at all if polarised at right angles, to each other. Now, natural rays of light from the same source behave, in regard to interference, quite like parallel polarised rays; and it seemed likely that two such rays would lose their power of interference if the direction of vibration (or greater ellipse-axis) of one of them were turned round by electro-magnetic forces 90° relatively to the other, for in this case the two rays would behave like two polarised at right angles to each other. This was effected (in a way he describes). It appears that the same thing was done some years ago by Prof. Abbe, using with natural light the natural rotation of a right and left quartz instead of electro-magnetic; and this before-unpublished method is also developed by Herr Sohncke, who describes a new interference-experiment with natural light.

SINCE Graham's time it has been generally accepted that thin parchment paper is the best material for a dialyser. A variety of substances have been experimented with lately by Herr Zott in Munich (*Wied. Ann.* 2), and he pronounces goldbeaters' skin the best; it has always at least twice the separative effect of parchment paper, and sometimes much more. In a list of relative permeability, goldbeaters' skin being valued as 1, we have next, sow-bladder 0·77, parchment paper 0·5, 2 mm. leather 0·025, and so on to the fifteenth, caoutchouc, 0·0001. For solutions which injure organic membranes, common earthenware cells (like those in Grove's battery) are best; but their effect is sixty to seventy-five times less than that of goldbeater's skin. All phenomena of diffusion are intensified, if the diaphragm is first evacuated in an air-pump; and the more quickly a substance diffuses itself through a diaphragm, the greater is the accelerative effect of evacuation. This evacuation should be renewed after each experiment. It induces endosmose in diaphragms which did not previously show it; and even colloids show a considerable endosmose, even surpassing that of most crystalloids if the time of diffusion is prolonged enough. Solution-mixtures of two substances are more easily and fully separated the further apart their relative velocities of diffusion; and dialytic separation is more rapid the oftener the external water is renewed.

IN a recent communication to the Erlangen Physical-Medical Society Prof. Gerlach describes a successful method he has devised for watching the embryo-growth in birds' eggs through a small glass window made at the sharper end. After detaching the end with a bent pair of scissors, a little albumen is taken out, so that the germinal disk of the yolk turns upwards; then the liquid is put back. Gum-arabic solution is spread on the opening, and wadding put round it; then a small (ladies') watch-glass is fixed on it with gum; collodion and amber-lac being afterwards added. The eggs must lie horizontally in the incubator; development then goes on normally, and may be observed till the fifth day (thus comprising the time most interesting to the embryologist), the egg being taken out and the window-end turned up.

THE French language in Canada, according to M. Demanche n a French review, presents no *patois*, owing to fusion of accents by the well-educated teachers in schools, &c., in the seventeenth century, who came from all parts of France. Further, the Canadian peasant is better educated than the French; and all French-Canadians speak English as well as French (an elevating factor). In France, while foreign words are often adopted without scruple, such as *rail*, *waggon*, *sleeping-car*, *tramway*, *ticket*, *square*, the French-Canadians generally translate, saying, *e.g.*, *lisse*, *char*, *char-dortoir*, *char-urbain*, *billet*, *carré*. The preservation of the French tongue on the banks of the St. Lawrence has been greatly favoured by the prodigious increase of the French-Canadians. Of a total population of 4,324,819 by the last census in 1881, there were 1,298,929 French. The total increase since the beginning of the century gives an annual rate of 21 per cent., while the increase in the United States for the same period is only 15 per cent. annually. In the province of Quebec the French form four-fifths of the population. Celibates are rare in Canada; and families number, on an average, eight to ten children, but sometimes one pair will give birth to twenty-five children. A twenty-sixth child is educated at the cost of the parish.

A NUMBER of workmen were entombed in a subterranean gallery at Chanulade (Dordogne) some time since. The work for their recovery was so unfortunately protracted that all hope of finding them alive was lost for a long period. But it was deemed necessary to continue the excavation in order to procure them a decent burial. This sad part of the programme could not be executed with success. Then it was decided to excavate a small hole and to use it for sending below an electric light and a photographic apparatus to ascertain what was the condition of the wrecked galleries. This operation was delayed by difficulties, but at last executed with complete success. A plate was procured showing the likeness of a young man who had not been crushed but who had evidently died of hunger. It is greatly feared this fate has been shared by others of his unfortunate companions.

ALTHOUGH scientific researches on the habits of the herring on the coast of Norway have been prosecuted almost without interruption since 1861 (at the instance of the late Dr. Axel Boeck), and some valuable results have been obtained therefrom, it is generally felt by those interested in this industry in Norway that there still remains a great deal to be done in this direction, as for instance has been the case in Scotland and Prussia. This is chiefly applicable to the "summer" herring visiting the shores of the provinces of Nordland and Tromsö, where hardly anything is known of the habits of the fish. It is, therefore, proposed, in order to promote this important industry, to prosecute scientific researches on the spawning of the fish, the localities or fiords preferred by it for that purpose, the time of the fish's coming inshore, and the climatic conditions most advantageous to its existence. Considerable fresh light is also expected to be thrown on this subject through the sea-water fish-hatching establishment recently started at Arendal, in the Christiania fiord.

THE additions to the Zoological Society's Gardens during the past week include a Macaque Monkey (*Macacus cynomolgus* ♂) from India, presented by Mr. L. H. G. Morgan; two Azara's Opossums (*Didelphys azaræ* ♂ ♀) from Rosaria, La Plata, presented by Capt. G. W. Freeman; three Striated Finches (*Munia striata*), a Nutmeg Finch (*Munia punctularia*), two Black-headed Finches (*Munia malacca*) from India, presented by Mr. L. B. Lewis; a Thunder Fish (*Misgurnus fossilis*) from Austria, a Ground Loach (*Cobites tænia*) from Russia, presented by Mr. Alban Doran; two Tasmanian Wolves (*Thylacinus cynocephalus* ♂ ♀) from Tasmania, two Red Kangaroos (*Macropus rufus* ♂ ♀), a Great Kangaroo (*Macropus giganteus*) from Australia, a Yellow-footed Rock Kangaroo (*Petrogale xanthopus*), two Hairy-nosed Wombats (*Phascolomys latifrons* ♂ ♀), two Vulpine Phalangers (*Phalangista vulpina*), two King Parrakeets (*Aprosmictus scapulatus*), a Bauer's Broadtail (*Platycercus zonarius*), two Swainson's Lorikeets (*Trichoglossus novæ-hollandiæ*), a Roseate Cockatoo (*Cacatua roseicapilla*) from South Australia, deposited; a Bay Antelope (*Cephalophus dorsalis* ♂) from West Africa, a Green-billed Toucan (*Ramphastos discolorus*) from

Guiana, a Sun Bittern (*Eurypyga helias*) from South America, a Thick-necked Tree Boa (*Epicrates cenchris*) from West Indies, purchased; three Long-fronted Gerbilles (*Gerbillus longifrons*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

AN OBSERVATION OF NEPTUNE OCCURRING IN LAMONT'S ZONES.—Mr. Hind pointed out in the *Astronomische Nachrichten*, No. 712, two cases of observations of Neptune occurring in Lamont's zones, in which the planet was mistaken for a star. The dates of these two observations are respectively October 25, 1845, and September 7, 1846. Prof. Schönfeld, in No. 2716 of the same publication, draws attention to a third instance in which an observation of the planet occurs in these zones. The date of this observation is September 11, 1846. It will be remembered that Neptune was optically discovered by Galle on September 23, 1846. Prof. Schönfeld thinks it advisable to give publicity to his discovery, lest at any time an astronomer should be led to think that this object, which is entered as No. 3818 in the Catalogue in the Munich Supplementband xii. (generally designated Lamont 5), was a "temporary" star.

THE ARMAGH OBSERVATORY.—We are glad to learn from a report recently issued by Dr. Dreyer, that an equatorial refractor by Mr. Grubb, having an excellent object-glass of 10 inches aperture, and 10 feet focal length, has been installed in the "Robinson Memorial Dome," erected by the same artist. The instrument has already been brought into use, and a series of micrometric observations of nebulæ has been commenced. We trust therefore that, under Dr. Dreyer's superintendence, the Armagh Observatory is now entering on a career of observational activity which will restore it to the position which it has formerly held as one of the foremost institutions of its kind in the British Isles.

DISTRIBUTION IN LATITUDE OF SOLAR PHENOMENA.—M. Tacchini, in a note appearing in the *Comptes rendus*, vol. cii. No. 11, gives a table showing the distribution in heliographic latitude of the various classes of solar phenomena in 1885. The table is remarkable as still further accentuating the difference seen at the present time in the behaviour of sunspots and prominences (NATURE, Feb. 25, p. 398). Not only have the prominences shown little or no diminution in dimensions or frequency during the past year, whilst sunspots and faculæ have notably declined, but the prominences are still detected in every latitude from pole to pole, whilst spots, faculæ, and metallic eruptions are confined almost entirely, the spots entirely, to latitudes lower than 40°, and in the great majority of instances to latitudes lower than 20°. The zones showing the greatest frequency for prominences are placed considerably further from the equator. There is also a difference in the proportionate distribution of the different classes of phenomena between the two hemispheres, as the following table will show :—

	Northern hemisphere	Southern hemisphere
Prominences	0·478 ...	0·522
Faculæ	0·367 ...	0·633
Sunspots	0·336 ...	0·664
Metallic eruptions	0·325 ...	0·675

Thus whilst the southern hemisphere has been about twice as prolific in the last three classes as the northern, there has been a much smaller difference between the hemispheres in the matter of prominences. The result of the comparison, on the whole, tends to show that, whilst there is a close connection between spots and metallic eruptions, ordinary prominences are to a great extent independent phenomena; indeed whilst, as already mentioned, sunspots have declined during 1885, prominences have actually been more frequent in the zones in which sunspots have not been seen.

PROMINENCES AND MAGNETIC DISTURBANCES.—The connection between sunspots and magnetic disturbances having been clearly established, it would seem natural to infer from the preceding and other similar indications of the independence of sunspot and prominence activity that but little connection would be traced between individual prominence displays and terrestrial magnetism. A note by M. H. Wild, presented by M. Mascart, appearing in the *Comptes rendus*, vol. cii. No. 9, seems, however, to favour the idea of a somewhat close connection, four remarkable observations of prominence-changes made by M. Trouvelot having been found to synchronise fairly closely with magnetic disturbances. An examination of the magnetic traces at Greenwich has, however, shown that in only one case out of the four was there anything like a sharp disturbance, the movements in the other instances being of a very ordinary character. Further, M. Trouvelot has recently published a series of prominence-observations in the *Bulletin Astronomique* for January, and in no one of these instances was there anything like a magnetic disturbance to correspond to the great and remarkable prominence-change M. Trouvelot was observing in the sun.

DISPLACEMENT OF LINES IN SOLAR PROMINENCES.—The observations of M. Trouvelot above referred to deserve a very careful and detailed examination, as, if confirmed, they will go far to utterly overthrow the views at present held as to the significance of the displacement of lines in the spectra of sunspots and prominences. M. Trouvelot records displacements so extraordinary, that an entire prominence more than 3′ in height was rendered visible when wholly outside the (tangential) slit, which was nearly closed! Other similar phenomena are also recorded, only less astonishing. It is of the utmost importance that, if other spectroscopists have witnessed similar phenomena, they should not delay to publish their experiences, as it seems impossible that displacements of so peculiar a character can be due solely to the motion in the line of sight of the gases under examination. In the meantime it would seem more reasonable to suppose that M. Trouvelot had made some extraordinary error in his observations.

ASTRONOMICAL PHENOMENA FOR THE WEEK 1886 MARCH 28—APRIL 3

(FOR the reckoning of time the civil day, commencing at Greenwich mean midnight, counting the hours on to 24, is here employed.)

At Greenwich on March 28

Sun rises, 5h. 46m.; souths, 12h. 5m. 6·6s.; sets, 18h. 24m.; decl. on meridian, 3° 4′ N.: Sidereal Time at Sunset, 6h. 48m.

Moon (one day after Last Quarter) rises, 2h. 19m.; souths, 6h. 48m.; sets, 11h. 19m.; decl. on meridian, 17° 54′ S.

Planet	Rises h. m.	Souths h. m.	Sets h. m.	Decl. on meridian ° ′
Mercury ...	5 53 ...	13 0 ...	20 7 ...	12 13 N.
Venus	4 11 ...	9 30 ...	14 49 ...	8 45 S.
Mars	15 16 ...	22 20 ...	5 24* ...	11 41 N.
Jupiter... ...	17 27 ...	23 38 ...	5 49* ...	1 23 N.
Saturn... ...	9 33 ...	17 45 ...	1 57* ...	22 49 N.

* Indicates that the setting is that of the following morning.

March h.
30 ... 2 ... Mercury stationary.

Variable-Stars

Star	R.A. h. m.	Decl. ° ′		h. m.	
U Cephei	0 52·2 ...	81 16 N. ...	Mar. 28,	19 14	*m*
R Sculptoris ...	1 21·7 ...	33 8 S. ...	,, 29,		*M*
S Ursæ Majoris ...	12 39·0 ...	61 43 N. ...	,, 30,		*m*
R Bootis	14 32·2 ...	27 14 N. ...	,, 28,		*m*
δ Libræ	14 54·9 ...	8 4 S. ...	,, 28,	5 10	*m*
			Apr. 1,	20 52	*m*
U Coronæ	15 13·6 ...	32 4 N. ...	Mar. 30,	0 11	*m*
W Herculis... ...	16 31·2 ...	37 34 N. ...	Apr. 3,		*m*
U Ophiuchi... ...	17 10·8 ...	1 20 N. ...	Mar. 29,	5 26	*m*
		and at intervals of		20 8	
X Sagittarii... ...	17 40·4 ...	27 47 S. ...	Mar. 31,	0 0	*m*
			Apr. 2,	21 30	*M*
W Sagittarii ...	17 57·8 ...	29 35 S. ...	,, 3,	2 20	*m*
U Sagittarii... ...	18 25·2 ...	19 12 S. ...	Mar. 30,	4 50	*m*
			Apr. 2,	4 50	*M*
β Lyræ	18 45·9 ...	33 14 N. ...	Mar. 31,	21 30	m_2
R Lyræ	18 51·9 ...	43 48 N. ...	,, 28,		*m*
η Aquilæ	19 46·7 ...	0 7 N. ...	Apr. 1,	2 20	*M*
R Sagittæ	20 8·8 ...	16 23 N. ...	,, 1,		*m*
δ Cephei	22 24·9 ...	57 50 N. ...	Mar. 28,	4 50	*m*

M signifies maximum; *m* minimum; m_2 secondary minimum.

Meteor Showers

Meteors from the following radiants may be looked for :—Near δ Ursæ Majoris, R.A. 180°, Decl. 60° N.; near β Bootis, R.A. 223°, Decl. 40° N.; near β Libræ, R.A. 226°, Decl. 8° S. Fireball date, April 2.